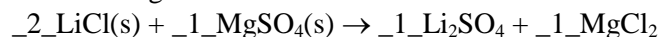


Gas Law Stiochiometry

Pre AP

You will need to complete on a separate sheet of paper. Show all work including units or no credit will be given.

1. Balance the following rxn:



If you started with 15.0g of LiCl, how many grams of MgSO₄ would you need to complete the rxn?

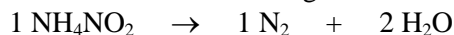
2. Methane (CH₄) burns with O₂ to form carbon dioxide (CO₂) and water vapor (H₂O). If 20.0g of CH₄ was mixed with 30.0 g of O₂ in a closed container and ignited:
- What would be the limiting reagent?
 - How much excess reagent would be left over?
 - How much CO₂ would be made?
 - How much H₂O would be made?

3. Given carbon dioxide occupying 5.5 L at 5°C and 0.74 atm.
- Find moles of carbon dioxide
 - Now find mass of carbon dioxide

4. How many grams of AlCl₃ must decompose in order to produce 3.10L of Cl₂ at 50.0°C and 98.4kPa? (HINT: Find moles of Cl₂ the grams of AlCl₃)



5. What volume of nitrogen can be produced by the decomposition of 50.0 g of NH₄NO₂ at 25°C and 1.20 atm? (HINT: Find moles of N₂ from grams of NH₄NO₂.)



6. Given the following unbalanced chemical equation for the rxn of Na and Cl_{2(g)}:

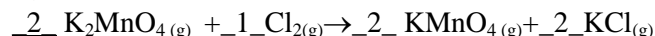


What volume of chlorine gas, measured at STP, is necessary for the complete rxn of 4.81g of Na.

7. $\underline{1}\text{C}_3\text{H}_{8(g)} + \underline{5}\text{O}_{2(g)} \rightarrow \underline{3}\text{CO}_{2(g)} + \underline{4}\text{H}_2\text{O}_{(g)}$

What volume of oxygen gas at 25°C and 1.04 atm is needed for the complete combustion of 5.53 g of propane (C₃H₈)?

8. Potassium permanganate, KMnO₄, is produced commercially by oxidizing aqueous potassium manganate, K₂MnO₄.



What volume of Cl_{2(g)}, measured at STP, is needed to produce 10.0g of KMnO₄?

9. If water is added to magnesium nitride, ammonia gas is produced when the mixture is heated.



If 10.3g of magnesium nitride is treated with 10.3 g of water, what volume of ammonia gas would be collected at 24°C and 752 mmHg?

Key 1. 0.177mol 2. a) O₂ b) 0781mol c) 0.496mol d) 0.9375mol

3. a) 0.178mol b) 7.83g 4. 10.09g 5. 15.93L 6. 2.34L 7. 2.95L 8. 0.71L 9. 5.07L